

Claims

1. A selection system comprising a bacterial cell deficient of an *araD* gene into which a vector carrying an *araD* gene, a complementary sequence thereof, or a catalytically active fragment thereof has been added as a selection marker.
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2. A selection system according to claim 1, wherein the *araD* gene is L-ribulose-5-phosphate 4-epimerase gene (EC 5.1.3.4.).
3. A selection system according to claim 1, wherein the *araD* gene
10 is mutated.
4. A selection system according to claim 3, wherein the mutation introduces a stop codon into position 8 of the *araD* gene.
5. A selection system according to claim 1, wherein the bacterial cell is an *Escherichia coli* cell.
- 15 6. A selection system according to claim 5, wherein the *E. coli* is an *E. coli* strain JM109.
7. A selection system according to claim 5, wherein the *E. coli* is an *E. coli* strain DH5 alpha.
8. A vector comprising an *araD* gene, a complementary sequence
20 thereof, or a catalytically active fragment thereof as a selection marker.
9. A vector according to claim 8, wherein the vector is an expression vector comprising:
 - (a) a DNA sequence encoding a nuclear-anchoring protein operatively linked to a heterologous promoter, said nuclear-anchoring protein comprising (i) a DNA binding domain which binds to a specific DNA sequence, and
25 (ii) a functional domain that binds to a nuclear component, or a functional equivalent thereof; and
 - (b) a multimerized DNA sequence forming a binding site for the nuclear anchoring protein, wherein said vector lacks a papilloma virus origin of
30 replication, and
 - (c) the *araD* gene, a complementary sequence thereof, or a catalytically active fragment thereof as a selection marker.
10. A vector according to claim 9, wherein the vector is an expression vector comprising:

(a) DNA sequence encoding a nuclear-anchoring protein operatively linked to a heterologous promoter, wherein the nuclear-anchoring protein is the E2 protein of Bovine Papilloma Virus type 1 (BPV), and

5 (b) a multimerized DNA sequence forming a binding site for the nuclear anchoring protein is of multiple binding sites the BPV E2 protein incorporated into the vector as a cluster, where the sites can be as head-to-tail structures or can be included into the vector by spaced positioning, wherein said vector lacks a papilloma virus origin of replication, and

10 (c) an *araD* gene, a mutated form of the *araD* gene, a complementary sequence thereof, or a catalytically active fragment thereof as a selection marker.

11. A vector of claim 10 additionally comprising a deletion in the multimerized DNA sequence.

15 12. A vector of claim 10 additionally comprising a mutation in Shine-Dalgarno sequence.

13. *E. coli* strain AG1 deficient of the *araD* gene.

14. *E. coli* strain JM109 deficient of the *araD* gene.

15. *E. coli* strain DH5alpha-T1 deficient of the *araD* gene.

20 16. *E. coli* strain DH5alpha-T1 deficient of the *araD* gene and *ulaF* gene.

17. *E. coli* strain DH5alpha-T1 deficient of the *araD* gene and *sgbE* gene.

18. *E. coli* strain DH5alpha-T1 deficient of the *araD* gene, *ulaF* gene, and *sgbE* gene.

25 19. *E. coli* strain AG1 deficient of the *araD* gene and *ulaF* gene.

20. *E. coli* strain AG1 deficient of the *araD* gene and *sgbE* gene.

21. *E. coli* strain AG1 deficient of the *araD* gene, *ulaF* gene, and *sgbE* gene.

30 22. A method of selecting the cells transformed with a plasmid containing an *araD* gene, a complementary sequence thereof, or a catalytically active fragment thereof as a selection marker and the gene of interest, the method comprising inserting the plasmid into the *araD* deficient host cell and growing the cells in a growth medium containing arabinose.

35 23. A method of claim 22 wherein the *araD* gene is L-ribulose-5-phosphate 4-epimerase gene (EC 5.1.3.4.).

24. A method of claim 22 wherein the *araD* gene is mutated.